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| EXAMINER |
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ALEJANDRO MULERO, LUZ L

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| ART UNIT | PAPER NUMBER |
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1763

DATE MAILED: 04/27/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/769,225

Applicant(s)

LAI ET AL.

Examiner

Luz L. Alejandro

Art Unit

1763

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 09 February 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 18-20 and 53-58 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 18-20 and 53-58 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☒ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Oath/Declaration***

The oath or declaration is defective. A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application by application number and filing date is required. See MPEP §§ 602.01 and 602.02.

The oath or declaration is defective because:

Non-initialed and/or non-dated alterations have been made to the oath or declaration. See 37 CFR 1.52(c). See the non-initialed and non-dated alteration for the citizenship of the first inventor.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 18-20, 53-54 and 56-58 are rejected under 35 U.S.C. 102(e) as being anticipated by Godyak, US 2003/0015965.

Godyak shows the invention as claimed including a plasma processing system comprising: a first substrate support structure configured to hold a first substrate 265a in the processing chamber; a second substrate support structure configured to hold a second substrate 265b in the processing chamber; and a transformer-coupled plasma

generator within the processing chamber disposed between the first substrate support structure and the second substrate support structure; wherein the transformer-coupled plasma generator includes a plurality of toroidal transformer cores and comprises a plasma generating plate having the plurality of transformers cores 262a/262b/262c/262d within the plasma generating plate and a plurality of through holes forming conduits from a first side of the plate to a second side of the plate; wherein the first and second substrate support structures are substantially parallel; wherein a plane of the toroidal transformer core is substantially parallel to the first and second substrate support; wherein the plasma generating plate is flat; wherein the toroidal core comprises a ferrite material; wherein the plasma generating plate includes a dielectric spacer between the first side and the second side, and a remainder of an outer surface of the plasma generating plate comprises an electrical conductor. For a complete description of the apparatus see, for example, figs. 7a and 7b, and their descriptions, and paragraphs 0017-0032 and 0084-0085.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of

the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 18-20 and 53-58 are rejected under 35 U.S.C. 102(e) as being anticipated by Shun'ko, US 6,392,351 in view of Shun'ko, U.S. Patent 5,998,933.

Shun'ko shows the invention substantially as claimed including a plasma processing system comprising: a first substrate support structure configured to hold a first substrate 105 in the processing chamber; a second substrate support structure configured to hold a second substrate 107 in the processing chamber; and a transformer-coupled plasma generator within the processing chamber disposed between the first substrate support structure and the second substrate support structure; wherein the transformer-coupled plasma generator includes a plurality of toroidal transformer cores and comprises a plasma generating plate having the plurality of transformers cores 114/116, 114a/116a within the plasma generating plate and a plurality of through holes 110/112, 110a/112a, forming conduits from a first side of the plate to a second side of the plate; wherein the first and second substrate support structures are substantially parallel; wherein a plane of the toroidal transformer core is substantially parallel to the first and second substrate support; wherein the plasma generating plate is flat; wherein the toroidal core comprises a ferrite material; wherein

Art Unit: 1763

the plasma generating plate includes a dielectric spacer 111/113 between the first side and the second side, and a remainder of an outer surface of the plasma generating plate comprises an electrical conductor. For a complete description of the apparatus see, for example, figs. 6 and 6a, and their descriptions.

Shun'ko '351 does not expressly disclose a transformer coupled plasma generator within the undivided processing chamber compartment. Shun'ko '933 discloses a transformer coupled plasma generator within a processing compartment (see figs. 1 and 5 and their description). In view of this disclosure, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the apparatus of Shun'ko '351 so as to include the transformer coupled plasma generator of Shun'ko '933 because this provides a uniform plasma density.

Furthermore, Shun'ko '351 and Shun'ko '933 are applied as above but do not expressly disclose that the transformer core further includes a second conduit not passing through a transformer core. However, a prima facie case of obviousness still exists because it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the conduits of the plasma generator during routine experimentation depending upon, for example, the desire plasma density and/or the desire plasma density distribution, and would not lend patentability to the instant application absent the showing of unexpected results.

Claim 55 is rejected under 35 U.S.C. 103(a) as being unpatentable over Godyak, US 2003/0015965.

Godyak is applied as above but does not expressly disclose that the transformer core further includes a second conduit not passing through a transformer core. However, a prima facie case of obviousness still exists because it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the conduits of the plasma generator during routine experimentation depending upon, for example, the desire plasma density and/or the desire plasma density distribution, and would not lend patentability to the instant application absent the showing of unexpected results.

### ***Response to Arguments***

Applicant's arguments filed 2/9/06 with respect to the Godyak reference have been fully considered but they are not persuasive. Applicant argues that fig. 7A of Godyak, for example, shows a divided processing chamber. However, the examiner respectfully submits that the figure reads on an undivided processing chamber since the plasma can pass between the plasma generators and can flow freely over both substrates. Applicant's arguments with respect to claims 18-20 and 53-58 with respect to the Shun'ko '351 reference have been considered but are moot in view of the new ground(s) of rejection.

**Conclusion**

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Luz L. Alejandro whose telephone number is 571-272-1430. The examiner can normally be reached on Monday to Thursday from 7:30 to 6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on 571-272-1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1763

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Luz L. Alejandro  
Primary Examiner  
Art Unit 1763

April 25, 2006